

Dear Mr. Moderator,
On behalf of Arlington resident Eileen M. Cahill of Dickson Avenue, I respectfully submit this letter regarding Article 38.
Sincerely, Jordan Weinstein, TMM Pct. 21

May 25, 2022

RE: Town Meeting Article 38

Dear Arlington Town Meeting Members,

First, I appreciate the time you give to participate in Town Meeting. I am writing to you as a civil and environmental professional engineer to ask that you REJECT Article 38 due to lack of engineering study. The following is the wording of Article 38:

ARTICLE 38

**ZONING BYLAW AMENDMENT / TWO FAMILY CONSTRUCTION ALLOWED
BY RIGHT IN R0 AND R1 RESIDENTIAL ZONES**

To see if the Town will vote to amend Section 5.4 of the Zoning Bylaw by amending definitions and expanding allowable residential uses in the R0 Large Lot Single-Family District and R1 Single-Family District with the goal of diversifying the housing stock; or take any action related thereto.

(Inserted at the request of Annie LaCourt and ten registered voters)

If approved, Town Meeting would dramatically change the town's zoning without any study to how this change will impact the town infrastructure such as sewer, water, roadways, traffic, trash disposal, rodent control and finances. We have no idea how much the town's population would increase if zoning is changed this dramatically. No one has studied it. Every time I have asked the question, the response is based on a feeling that "it won't increase that much." How is this responsible planning?

We need to look at this over a 30-year planning period with population projections, and study how the town's infrastructure will be impacted. Perhaps we need to start with a zoning change to a section of town instead of town-wide? Plan and study.

Engineering design is BASED ON ZONING. Sizing of infrastructure is all based on zoning. This is not an insignificant change. I urge you to vote against this Town Meeting Article. The following gives technical back-up to my concern.

Sewer:

Sewer pipes are sized based on the number of lots and the zoning for the location of the sewer. The size of the sewer pipe is the pipe's capacity. Sewer pumping stations (wet wells to hold the raw wastewater) are also sized based on projected flow to pumping station. Engineers count the number of lots and assign an estimated wastewater flow per lot, based on the zoning. **The zoning is the basis of the design because it gives the engineer the information on how the land will be used.** It is irresponsible to the health of Arlington residents to change the zoning of the town without performing a technical assessment of its sewer system to determine if the sewer system has the capacity to handle increased flows.

Aged Sewer System

Arlington's sewer system is old. Much of its original pipes are clay. Clay material is susceptible to breaks when the road is disrupted by construction of other utilities (gas or water repair, etc). Roots grow into the cracks. Sewer pipes also break over time. The corrosiveness of sulfides generated from wastewater deteriorates sewer infrastructure especially long force mains and manholes that receive flow from sewer force mains. Once the sewage that has been contained without oxygen in the force main is discharged to a sewer manhole, the sulfates in the wastewater reacts with the oxygen and creates sulfides that deteriorate the concrete.

One of the arguments I have heard in defense of changing the zoning and not looking at the sewer capacity is the Town's current population is about 10,000 persons less than historical population. The thinking is that therefore the Town's sewer system can handle additional flow. This thinking is irresponsible. It does not consider the original design of the system, peak flows, and does not consider the aged infrastructure. It also does not consider that when the town had about 10,000 more persons, there were no environmental restrictions in place to document sewer overflows. Massachusetts Department of Environmental Protection (MassDEP) regulations are a fairly recent development. Sewer overflows were not documented as they are today.

For example, a street downstream of 300 houses likely has an 8-inch sewer. An 8-inch clay sewer at minimum slope has a capacity of about 330 gpm (capacity increases with steeper slope and smoother new PVC pipe material).

- 300 houses at 3 bedrooms per house (900 bedrooms) and 110 gallons per day (gpd) per bedroom would be an average wastewater flow of 99,000 gpd or 69 gallons per minute (gpm).
- Peaking factor of 5. A peaking factor is to account for the busiest times sewer is being used (everyone flushing and taking showers in the morning, etc). Peaking factors are determined with engineering judgment based on flow and use. Say, peak flow for this neighborhood is 345 gpm. This neighborhood would likely have been sized with an 8-inch sewer.
- Let's say 50 houses in this neighborhood convert to 2-family houses. So, now the flow is 250 houses at 3 bedrooms per house and 50 houses at 6 bedrooms per house (1,050 bedrooms). The average flow is now 115,500 gpd or 80 gpm. Peak flow is now 400 gpm. **This puts the sewer at capacity, without even adding in flow from infiltration and inflow which would be significant with aged pipe. This creates a health hazard, especially during a rain storm and even more when groundwater is high in the spring.**

This “back of a napkin” scenario written about is just one possible simple situation. This is the reality of changing the Town’s zoning without any consideration to the Town’s infrastructure. *Residents in the lower elevations in town should be very concerned because wastewater all flows downhill.*

Infiltration and Inflow

The Town is under a MassDEP Administrative Consent Order (ACO) for a past sewer overflow. The town does ongoing infiltration and inflow removal to meet the requirements of this ACO. Sewer systems have problems with clean water going into sewer pipes by infiltration and inflow. Infiltration is groundwater seeping into the sewer through cracks in the sewer main or house sewer service. Inflow is direct clean water going into the sewer pipe through combined sewer and storm drains or basement sump pumps.

An argument (in support of eliminating single family zoning) was given that the Town performs infiltration and inflow removal, and therefore, it will have capacity to handle additional wastewater flow from the proposed zoning change. Again, this is not responsible thinking.

The Town spends millions of dollars to remove infiltration and inflow. These projects are successful at reducing infiltration to an aged sewer main. However, the Town does not maintain private sewer services. Therefore, these sewer mains that have been lined are still receiving infiltration from aged sewer services that have not been lined. Additionally, there are likely thousands of feet sewer main in Town that is recommended to be rehabilitated to reduce infiltration.

Trenchless sewer repairs are happening all over town, likely to reduce infiltration to aged and broken pipes. Trenchless sewer pipe lining repairs do not increase the size of sewers. Eliminating zoning could increase town population significantly. How will the increased sewage flow be conveyed safely, so there are not sewage back-ups in basements, or back-ups into the streets through sewer manholes?

Sewer “Trouble Spots”

The Town’s Sewer Department has a list of about thirty “trouble spots” (See Appendix A). This is a testament to the hard work the people who work in the sewer department do for our Town to keep our streets and basements from flooding with raw sewage. **It is also a strong indication that our sewer system may not have capacity to take on unknown, variable new flows without studying possible significant infrastructure assessment and investment.** Many of these trouble spots are in single family zones.

As a professional civil engineer, I cannot accept the reasoning that the town’s population was 10,000 persons higher in the past, and therefore, it is safe to eliminate R0 and R1 zoning now. This is not responsible study. There are so many factors to consider.

Drinking Water and Water Mains

Water mains are sized the same way. It is based on the zoning. How will clean drinking water be safely conveyed throughout town without tremendous financial strain to the town of infrastructure upgrades?

I have heard the argument that is ok to change the zoning because we now use less water due to the technology of water saving devices. This is good news that we are consuming less water. But, the purpose of water saving devices is to reduce the amount of clean water that enters the sewer system and conserve water. Water saving devices is not a means to implement a irresponsible town zoning and planning.

Roadways

Another consideration is the roads. The roads would have increased traffic, and more pavement issues to repair and rehabilitate. I have heard an argument that the eople who move into a 2-family in Arlington will not have cars. This is not reasonable planning, and I do not know on what this concept is based. It is irresponsible to not look at impacts to roadways and traffic.

Traffic

With greater density in our residential neighborhoods, how will the increase in traffic impact our roads? Residential areas throughout the town already experience unsafe levels of cut through traffic. Our main roads, Mass. Ave, Pleasant St., Medford St., Lake St., Summer St., already cannot handle the traffic we see now. Arlingtonians see the result as we see an ever increasing amount of drivers speeding through our residential neighborhoods. How will these roads be able to handle even more traffic from our denser neighborhoods? The Town is working hard to improve the walkability of our Town, especially for children walking to school. This zoning change threatens to undue all of that work by pushing more speeding traffic through our neighborhoods.

Trash Disposal and Rodents

Finally, trash disposal would be an issue. The Town already has a very bad rat infestation problem.

Financial Implications

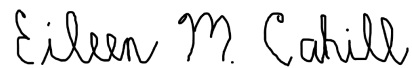
The Town should not change its zoning without doing an assessment of the money that will be needed to upgrade infrastructure to accommodate the zoning changes.

Conclusion

Dr. Edward H. Kass, a founding member and first president of the Infectious Diseases Society of America and founding editor of the *Journal of Infectious Disease,s* recognized that sewage treatment plants, railroads, roads, and highways for transporting food, electric refrigerators, and chlorinated water are critical to public health. These are all fairly recent advancements in human history to human health and have been critical to lowering mortality rates from infectious disease.

We have an obligation to human health to manage our infrastructure responsibly. **Changing the Town's zoning without engineering study of the impacts this will have on our Town's infrastructure does not manage our infrastructure responsibly. I am respectfully asking you to vote "No" for Article 38.**

Sincerely,

A handwritten signature in cursive script that reads "Eileen M. Cahill".

Eileen M. Cahill, P.E., LEED AP
48 Dickson Avenue

Appendix A

List of Sewer Trouble Spots from Town Sewer Department

TROUBLE SPOTS

- 94 COOLIDGE AND HAWTHORNE (TOP OF HILL) RUN DOWN HILL TOWARD MURRY ST. 206 ft AFTER YOU RUN GO TO MURRY ST AND CHECK MANHOLE TO SEE HOSE IS THERE
- 17 BRATTLE LATTERAL IS UP ON WALL RUN TOWARDS MASS 100FT
- 194 WALLISTON WASH-OUT HOUSE LATTERAL WITH GUN(A LOT OF PAPER)
- CLAREMONT CT MANHOLE TOP OF CLAREMONT TO DEAD END 122FT
- PARK AVE AND MASS AVE IN SIDEWALK RUN UP TOWARDS D'AGOSTINOS 221FT
- 28 KILSYTHE TOWARDS DEAD END OF MAIN RUN 150FT
- DRAKE VILLAGE MANHOLE BY GAZEBO TO MANHOLE BY BUILDING RUN 78ft
- LOWELL ST FROM 182 TO 202 LOWELL 280FT
- CORNER OF LOWELL AT MASS IN SPA REAR LOT RUN 400FT
- 295 FOREST MANHOLE GOES ACROSS ST TO SIDEWALK(DIAGONAL) ACROSS FROM EACH OTHER
- 8 DODGE ST.@ LORRIANE 1st INTERSECTION RUN DOWN HILL 200 ft NEXT INTERSECTION @ 24 DODGE RUN DOWN HILL 200ft BE CAREFULL OF WASH-OUT PIPE
- TOMAHAWK ST @ SENINOLE ST WASH-OUT WITH GUN
- 15 HIAWATHA LN WASH-OUT THEN RUN UP 200FT
- TERESA CIR WASH-OUT
- 248 RIDGE @ WINCHESTER-RUN UP WINCHESTER ^{300'} ~~200ft~~ NEED TO USE HOOK ^{300'} TO LIFT UP MISSLE TO GET IN PIPE RUN DEGREASER ON WAY UP WINCHESTER
- 32 RIDGE WASH-OUT (PAPER)
- POND LN @ MASS IN CROSSWALK RUN UP POND 262FT TO A DEAD END
- FRANKLIN AND HAMLET "MWRA MANHOLE" RUN UP TO NEWTON ST 220 ft YOU NEED HOOK TO GET MISSLE INTO PIPE RUN DEGREASER UP TO NEWTON ST
- PALMER ST @ HAMLET ST CHECK MANHOLE IT HAS A CHIMNEY/DROP MAKE SURE IT IS FLOWING
- FRANKLIN ST @ JEAN ST CHECK MANHOLE IN FRONT OF 137/137a MAKE SURE NO PAPER IS BACKING UP AND CHIMNEY/DROP IS CLEAR (USE GUN IF NEED BE)
- AMSDEN ST @ WALDO ST RUN UP AMSDEN 203 ft
- AMSDEN @WALDO TOWARDS WINDSOR 150FT IT'S A DEAD-END MANHOLE FROM A DROP
- Tele/Waldo towards amsden (under park) run 220 ft

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- Tele/Waldo towards amsden (under park) run 220 ft
- 155 MASS AVE IN SIDEWALK RUN UP TO CLEVELAND ST ABOUT 300 ft...WALK UP AND CHECK MANHOLE IN CROSSWALK ON CLEVELAND ST TO SEE HOSE
- CLEVELAND ST RUN UP 320ft WILL GET YOU TO WINTER ST
- FREEMONT ST @ SUNNYSIDE RUN UP FREEMONT 390 ft... IF YOU SEE A LOT OF SILT BUILD UP @ MANHOLE USE GUN TO WASH IT AWAY
- 86 GARDNER ST @ MEMORIAL WAYRUN UP FREEMONT 80 ft...NEXT MANHOLE(102)RUN 90 ft...NEXT MANHOLE(122) RUN 160 ft....NEXT MANHOLE(168) RUN 157 ft..
- DRAKE VILLAGE MANHOLE BY GAZEBO TO MANHOLE BY BUILDING RUN 78ft
- ~~326/330 RIDGE ST WASH-OUT LATTERAL~~
- * 256 MYSTIC ST Run FROM FAIRVIEW at MYSTIC up SORESON - Run MYSTIC at SORESON up 20
- 17 BATTLE ST & Apts. Manhole in sidewalk By Bridge Run up 200ft towards MASS AVE

- LEGACY APTS; MANHOLE BY PARKING GARAGE TO DUMPSTER MANHOLE (152) DUMPSTER MANHOLE TO MANHOLE BY FENCE SEWER RUNS THROUGH HOUSES ONTO WHITTMORE ST
- 15/29 FREEMONT COURT MANHOLE IN GRASS RUN UP BETWEEN PROJECTS 120ft IT'S A DEAD-END.
- DOROTHY RD @ BURCH TO 61/63 DOROTHY @ PARKER 318ft 61/63 DOROTHY TO 73 DOROTHY 213ft 73 DOROTHY TO LITTLE JOHN 244ft. LITTLE JOHN TO LAMP HOLE 125ft
- MEDFORD ST IN FRONT OF FIDELITY HOUSE NEXT MANHOLE DOWN RUN-UP TOWARDS FIDELITY 225FT

Read / Thersa ?

286 Oakland Manhole wash-out

154/108 ~~SE~~ Gardner Run up Between Building and Fence 100 ft.

Spring Valley Bottom of hill does sewer main behind houses Along Pond Full reel (450-500 ft)